

CLAIMS

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What is claimed is:

1. A method for controlling the update frequency of a positioning device in a mobile terminal, said method comprising:

10 storing at least one reference position in said mobile terminal; determining the

current position of said mobile terminal;

computing a distance of said current position of said mobile terminal from said

reference position; and

15 determining a position update frequency based on said distance between said

current position of said mobile terminal and said reference position.

2. The method of claim 1 wherein determining a position update frequency based on

said distance between said current position of said mobile terminal and said reference

20 position comprises increasing said update frequency as said distance between said current

position of said mobile terminal and said reference position decreases.

3. The method of claim 1 wherein determining a position update frequency based on

said distance between said current position of said mobile terminal and said reference

25 position comprises decreasing said update frequency as said distance between said current

position of said mobile terminal and said reference position increases.

5 4. The method of claim 1 further comprising determining the velocity of said mobile
terminal based on two or more position estimates.

5. The method of claim 4 wherein determining said position update frequency as a
function of said distance between said current position of said mobile terminal and said
10 reference position further comprises determining said position update frequency as a
function of said distance between said current position and said reference position and
said velocity of said mobile terminal.
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6. The method of claim 5 wherein determining said position update frequency as a
function of said distance between said current position of said mobile terminal and said
15 reference position and said velocity of said mobile terminal comprises increasing said
position update frequency as said velocity increases and decreasing said position update
frequency as said velocity decreases.

20 7. The method of claim 1 further comprising:
comparing said distance between said current position of said mobile terminal and
said reference position to a predetermined threshold; and
performing a predetermined action if said distance between said current position
of said mobile terminal and said reference position meets said threshold.

5 8. The method of claim 7 wherein performing a predetermined action if said distance
between said current position of said mobile terminal and said reference position meets
said threshold comprises searching for a channel in an alternate network.

9. The method of claim 8 wherein searching for a channel in an alternate network
10 comprises searching for a control channel in a private wireless telephone system.

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10. A mobile terminal comprising:
a transceiver transmitting and receiving signals over a wireless channel;
memory storing at least one reference position;
15 a position estimator to periodically determine a current position of said mobile
terminal at a variable position update frequency; and
control logic including a processor to calculate the distance of said mobile
terminal from said reference position based on said current position of said
mobile terminal and to adjust said variable position update frequency as a
20 function of said distance of said mobile terminal from said reference
position.

11. The mobile terminal of claim 10 wherein said position estimator is in a removable
device removably attached to said mobile terminal.

5 12. The mobile terminal of claim 10 wherein said position estimator comprises a GPS
receiver.

13. A method of initiating a search for a control channel in a communications
network by a mobile terminal, said method comprising:

10 storing at least one reference position indicative of the location of said
communications network in said mobile terminal;
determining the current position of said mobile terminal;
computing the distance of said current position of said mobile terminal from said
reference position; and
15 initiating a search for a channel based on said distance between said mobile
terminal and said communication network.

14 The method of claim 13, including establishing communication between said and
said mobile terminal and said communication network.

20 15. The method of claim 14 wherein establishing communications between
said mobile terminal and said communications network comprises establishing
communication with a private radiocommunication system.

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- 5 16. The method of claim 15 wherein establishing communication with a private
radiocommunication system comprises establishing communication with said private
radiocommunication system via a short-range air interface.
- 10 17. The method of claim 16 wherein establishing communication with said private
radiocommunication system via a short-range air interface comprises establishing
communication with said private radiocommunication system via a Bluetooth interface.
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- 15 18. The method of claim 13, wherein determining the current position of said mobile
terminal comprises receiving signals from navigation satellites and calculating said
current position from said signals received from said navigation satellites.
- 20 19. The method of claim 13, wherein determining said current position of said mobile
terminal is repeated at intervals dependant on said distance of said current position of said
mobile terminal from said reference position.
- 25 20. The method of claim 13, further comprising determining the rate of change in said
position of said mobile terminal relative to said reference position.
21. The method of claim 20, wherein determining said current position of said mobile
terminal is repeated at intervals dependant on said rate of change of distance of said
mobile terminal from said reference position.

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22. The method of claim 20, including determining the rate of change in said position of said mobile terminal relative to said reference position and initiating a search for a channel when: (i) said distance between the mobile terminal and the reference position is less than said predetermined distance, and, (ii) said rate of change in said position of said mobile terminal relative to said reference position exceeds a predetermined value.

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23. A mobile terminal comprising:

a transceiver transmitting and receiving signals over a wireless channel;

memory storing at least one reference position indicative of the location of a communications network;

a position estimator to determine a current position of said mobile terminal; and

control logic including a processor to calculate the distance of said mobile

terminal from said reference position based on said current position of said

mobile terminal and to initiate a search for a channel based on said

calculated distance.

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24. The mobile terminal of claim 23, wherein said position estimator comprises a receiver adapted to receive signals from navigation satellites and to calculate said current position from said received signals.

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5 25. The mobile terminal of claim 23, wherein said control logic further calculates the
rate of change of said current position relative to said reference position.

26. The mobile terminal of claim 25, wherein said control logic updates said current
position at a frequency dependant on said rate of change of said current position relative
10 to said reference position.

27. The mobile terminal of claim 23, wherein said control logic further calculates the
rate of change of said current position of said mobile terminal relative to said reference
position, and initiates a search for a channel based on said calculated distance between
15 said mobile terminal and said reference position and said rate of change of said current
position of said mobile terminal relative to said reference position.

28. The mobile terminal of claim 23 wherein said mobile terminal further comprises a
20 Bluetooth interface.

29. A method for controlling the initiation of searches by a mobile terminal for a
channel associated with a private radiocommunication system, said method comprising:
storing a reference position within the mobile terminal, said reference position
being within the boundaries of the private radiocommunication system;
25 determining the current position of said mobile terminal;

5 computing the distance of said current position of said mobile terminal from said

reference position; and

initiating a search for a channel provided by said private radiocommunication

system based on said computed distance between said current position of

said mobile terminal and said reference position.

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30. The method of claim 29, wherein determining the current position of said mobile terminal and computing the distance of said current position of said mobile terminal from said reference position are preformed repeatedly.

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31. The method of claim 29, wherein said mobile terminal repeatedly searches for a channel provided by said private radiocommunication system as long as said distance of said current position of said mobile terminal from said reference position is less than said predetermined distance.

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32. The method of claim 29, further including determining the rate of change of said distance between said current position of said mobile terminal and said reference position and initiating a search for a channel provided by said private radiocommunication system in response to: (i) said rate of change being greater than a predetermined value, and, (ii) said distance between said current position of said mobile terminal and said reference position being less than a predetermined distance.

5 33. The method of claim 29, wherein initiating a search for a channel provided by said
private radiocommunication system is further based on the rate of change of said distance
between said current position of said mobile terminal and said reference position.

10 34. A method of controlling the initiation of a search by a mobile terminal for a
channel associated with a radiocommunication system comprising:

repeatedly determining the location of the mobile terminal with respect to a
reference position associated with the radio communication system; and
initiating a search for a channel associated with said radio communication system
if the computed distance between the mobile terminal and the reference
position is less than a predetermined distance.

15 35. The method of claim 34 further comprising:

repeatedly determining the rate of change of said distance between said mobile
terminal and said reference position; and
initiating a search for the channel associated with said radio communication
system when:

- (i) the distance between said mobile terminal and said reference position is
less than said predetermined distance, and,
- (ii) (ii) when the rate of change of the distance between said mobile terminal
and said reference position exceeds a predetermined value.

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